UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/695,755	10/24/2000	Michael A. Nelson	CROSS1400-1	2697

44654   7590   03/08/2006

SPRINKLE IP LAW GROUP
1301 W. 25TH STREET
SUITE 408
AUSTIN, TX 78705

EXAMINER
RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/695,755	NELSON ET AL.
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/8/2005*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments, see Response, filed 2/8/2005, with respect to the rejection(s) of

claim(s) 1-23 under one interpretation of Epps et al. (USPN 6,731,644) have been fully

considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon

further consideration, a new ground(s) of rejection is made in view of a second interpretation of

Epps et al. (USPN 6,731,644).

2.   On pages 8-9 of the Response, Applicant asserts that "Epps does not teach or suggest a

memory structure in which a frame is stored in a receive buffer while header information is

stored in header memory such that a routing decision can be made for the frame before the frame

reaches the head of the receive buffer." Examiner, respectfully, disagrees. Epps teaches that the

receive FIFO (ref. 215) is a single physical buffer which is logically segmented into a header and

a tail FIFO (Fig. 3; col. 5, lines 47-60; and col. 8, lines 29-34). Therefore the receive FIFO is "a

memory structure in which a frame is stored" since it stores both the header and tail sections. In

addition, Epps teaches that the header information is written into Packet Header Buffers (ref.

480) which are distinct from the receive buffer (ref. 215) (Figs. 3 and 4; col. 5, lines 47-60; and

col. 9, lines 34-41) where the pipeline scheduler retrieves the header information from the Packet

Header Buffers, rather than the receive FIFO, to make routing decisions (col. 5, line 61-col. 6,

line 6 and col. 9, lines 1-48). Thus, the Packet Header Buffers are a header memory to store

header information "such that a routing decision can be made for the frame before the frame

reaches the head of the receive buffer."

3.   In view of the foregoing, Examiner maintains that Epps anticipates the independent

claims.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-5, 7, 9, 12-14, and 19-23 are rejected under 35 U.S.C. 102(e) as being

anticipated by Epps et al. (USPN 6,731,644), of record.

6.   Regarding claims 1, 9, 19, 20, and 23, Epps discloses a method and system comprising:

receiving a plurality of frames (col. 3, lines 11-36 and col. 4, lines 58-67); storing the frames in a

receive buffer (ref. 215), wherein the receive buffer is configured to be accessed in a

first-in-first-out fashion (Fig. 3; col. 5, lines 47-60; and col. 8, lines 29-34) where physically

there is only a single receive buffer that stores the header and tail portion of the frame; storing

header information corresponding to each of the frames in a header storage (ref. 480), wherein

the header storage is configured to provide access to the header information in the same order as

the frames (Figs. 3 and 4; col. 5, lines 47-60; and col. 9, lines 34-41); retrieving header

information from the header storage, wherein the header information corresponds to a first frame

(col. 5, line 61-col. 6, line 6; col. 9, lines 1-15; and col. 9, lines 34-41); prior to the first frame

reaching a head position in the receive buffer, making a routing decision for delivering the first

frame to its destination based upon the header information (col. 5, line 61-col. 6, line 6 and col.

9, lines 1-22) where the routing decision is made in an intermediate stage of the pipeline process

(the TLU stage: col. 6, lines 36-42) and where the packet is transferred once it has reached the

final pipeline stage; retrieving the first frame from the receive buffer (col. 5, line 61-col. 6, line 6

and col. 9, lines 11-22) where the "frame" is retrieved from the receive buffer and sent transmit

buffer; and routing the first frame based upon the routing decision (col. 3, lines 22-34 and col. 9,

lines 1-22).

7.   Regarding claims 2, 21, and 22, Epps discloses that the routing decision for the first

frame is made while a preceding frame is being routed (col. 3, lines 22-36 and col. 5, line 61-col.

6, line 6).

8.   Regarding claim 3, Epps teaches the limitation wherein routing the first frame comprises

transmitting the first frame to the transmit buffer of a destination determined by the routing

decision (col. 1, lines 51-56; col. 3, lines 22-34; and col. 9, lines 1-22).

9.   Regarding claim 4, Epps discloses maintaining a timer (TTL) corresponding to each

header in the header storage (col. 11, line 22 and col. 11, lines 38-45).

10.   Regarding claim 5, Epps discloses retrieving a timer corresponding to the retrieved

header information, determining whether the timer corresponding to the retrieved header

information exceeds a predetermined maximum value (TTL expired), and discarding the frame

("switch cannot forward the packet") corresponding to the header information if the timer

corresponding to the retrieved header information exceeds the predetermined maximum value

(col. 11, line 22 and col. 11, lines 38-45).

11.   Regarding claims 7, 12, 13 and 14, Epps teaches the limitation wherein the receive buffer

is a First-in-first-out (FIFO) buffer having a head position and a tail position, wherein entries are

written to the tail position and are promoted through the FIFO buffer to the head position, and

wherein retrieving the first frame from the receive buffer comprises reading the frame at the head

position (Fig. 3; col. 5, line 51-col. 6, line 6; and col. 15, lines 61-65).

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

13.   Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Epps et

al. (USPN 6,731,644), of record, as applied to claims 1 and 9 above, and in further view of

Darnell et al. (US 6,317,415), of record.

14.   Regarding claims 6 and 10, Epps does not expressly disclose snooping on received

frames to identify the header information corresponding to each of the frames. Darnell teaches,

in the analogous field of communications, using a snoop circuit (ref. 120) for snooping on

received frames to identify the start of a frame (Fig. 5 and col. 11, lines 53-col. 5, lines 20-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to snoop on received frames to identify the header information corresponding to each

of the frames since snooping is well known in the art as a means for identifying portions of a

data stream.

15.   Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Epps et

al. (USPN 6,731,644), of record.

16.   Regarding claims 8 and 11, Epps does not expressly teach providing a bypass circuit coupled to the header storage, wherein if no header information is available at the head of the header storage, the bypass circuit makes next-received header information immediately available. However, Epps does teach that the switch is to operate as fast as possible (col. 3, lines 34-35). Epps also suggests that the packet is operated upon as soon as possible ("as the data arrives") (col. 6, lines 19-24). Therefore it would have been obvious to one of ordinary skill in the art to provide a bypass circuit coupled to the header storage, wherein if no header information is available at the head of the header storage, the bypass circuit makes next-received header information immediately available in order to ensure a packet is processed as soon as possible (i.e. a packet does not wait in a buffer while the processor simultaneously waits for a packet to process).

17.   Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Epps et al. (USPN 6,731,644), of record, as applied to claims 1 and 9 above, and in further view of Kent et al. (US 4,845,722), of record.

18.   Regarding claim 15, Epps does not expressly disclose a plurality of timers associated with each frame in the receive buffer, wherein each timer indicates the amount of time the corresponding frame has been in the receive buffer. Kent teaches, in a switching system, using a plurality of timers associated with each frame in a buffer, wherein each timer indicates the amount of time the corresponding frame has been in the buffer in order to ensure that the buffer does not overflow (col. 16, lines 25-36). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have a plurality of timers associated with each frame

in the receive buffer, wherein each timer indicates the amount of time the corresponding frame

has been in the receive buffer in order to ensure that the buffer does not overflow.

19.   Regarding claim 16, Epps in view of Kent suggests that the timers are stored in a first-in-

first-out (FIFO) timer storage, wherein the timers are promoted through the FIFO timer storage

as the corresponding frames are promoted through the receive buffer. Epps discloses storing

information in FIFOs so that the information in one FIFO will progress through at the same rate

as related information in another FIFO (Fig. 3; col. 5, line 51-col. 6, line 6; and col. 15, lines 61-

65). Kent teaches the use of timers (col. 16, lines 25-36). Therefore it would have been obvious

to the of ordinary skill in the art at the time of the invention to store the timers in a FIFO timer

storage, wherein the timers are promoted through the FIFO timer storage as the corresponding

frames are promoted through the receive buffer in order to relate two pieces of information given

their placement in a FIFO buffer.

20.   Regarding claim 17, Epps in view of Kent does not expressly disclose that the timers are

stored in a random access timer storage, wherein each timer is associated with one of the frames

in the receive buffer; however, Epps does disclose storing information in random access

memories (col. 26, lines 4-5; col. 30, lines 49-52; and col. 30, lines 65-67). Examiner takes

official notice that random access memory is well known in the art. Therefore it would have been

obvious to one of ordinary skill in the art at the time of the invention to store the timers in a

random access timer storage, wherein each timer is associated with one of the frames in the

receive buffer since RAM is well known in the art.

21.   Regarding claim 18, Epps does not expressly disclose transmit timers associated with the

transmit buffer, wherein the transmit timer indicates the amount of time the frame currently

residing in the transmit buffer has been in the transmit buffer. Kent teaches, in a switching

system, using a plurality of timers associated with each frame in a buffer, wherein each timer

indicates the amount of time the corresponding frame has been in the buffer in order to ensure

that the buffer does not overflow (col. 16, lines 25-36). Therefore it would have been obvious to

one of ordinary skill in the art at the time of the invention to have transmit timers associated with

the transmit buffer, wherein the transmit timer indicates the amount of time the frame currently

residing in the transmit buffer has been in the transmit buffer in order to ensure that the buffer

does not overflow.

Conclusion

22.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. Nichols et al. (US 4,977,582) and Sang et al. (US 6,577,636) disclose

routing/forwarding systems that include storing frame header information.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The

examiner can normally be reached on Mon.-Fri. 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

                                                        Daniel J. Ryman
                                         ŊƆ   Examiner
                                                        Art Unit 2665